882.

SUPREME COURT OF THE UNITED STATES.

No. 223.

ELIJAH PHELPS, PLAINTIFF IN ERROR,

vs.

JACOB MOYER.

IN ERROR TO THE CIRCUIT COURT, UNITED STATES, FOR THE DISTRICT OF INDIANA.

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[GIDEON, Print.]

Pleas of the circuit court of the United States, for the seventh judicial circuit and district of Indiana, begun and holden at Indianapolis, in said district, before the honorable John McLean, one of the justices of the Supreme Court of the United States, and the honorable Elisha M. Huntington, district judge of the United States for the district of Indiana, on the thirtieth day of May, in the year of our Lord one thousand eight hundred and fifty-one.

ELIJAH PHELPS
vs.
JACOB H. MOYER. } Trespass on the case.

Be it remembered, that heretofore, to wit, on the fifth day of December, in the year of our Lord one thousand eight hundred and forty-eight, the said plaintiff, by Zebulon Baird, esq., his attorney, comes and files in the clerk's office of the said court his certain præcipe in writing, in these words, to wit:

In the circuit court of the United States, for the seventh circuit and district of Indiana.

ELIJAH PHELPS
vs.
JACOB H. MOYER. } Trespass on the case. Damages 2,000 dollars.

Issue writ according to law.

ZEBULON BAIRD,
Attorney for plaintiff.

Whereupon, on same day, there was issued from said clerk's office of said court a summons, in due form of law, directed to the marshal of said district, commanding him, etc.; which said writ was delivered to the said marshal, and afterwards by him duly returned to the office from whence it was issued, endorsed as follows, to wit:

Came to hand December 6, 1848, and served, by copy, on the within named defendant, Jacob H. Moyer, on the eleventh day of January, eighteen hundred and forty-nine.

A. C. PEPPER, *Marshal*,
By GEORGE McOUAT, *Deputy*.

And afterwards, to wit, on the first day of May, eighteen hundred and forty-nine, the said plaintiff, by his said attorney, comes and files in the clerk's office of said court his certain declaration in writing, in these words, to wit:

UNITED STATES OF AMERICA,
The State of Indiana.

In the circuit court of the United States, for the seventh circuit and district of Indiana.

Elijah Phelps, a citizen of the United States of America, plaintiff in this suit, complains of Jacob H. Moyer, defendant in this suit. in a plea of trespass on the case.

For that, whereas we, Zebulon Parker and one Austin Parker, heretofore, to wit, on the nineteenth day of October, eighteen hundred and twenty-nine, at the district aforesaid, obtained certain letters patent, issued in the name of the United States of America, under the seal thereof, and signed by Andrew Jackson, the then President thereof, and countersigned by Martin Van Buren, the then secretary of State, (by the name and description of M. Van Buren, secretary of State,) having date at the city of Washington, on the day and year last aforesaid; which said letters patent, after reciting that whereas Zebulon Parker and Austin Parker, *a* citizens of the United States, had alleged that *he* had invented a new and useful improvement in the application of hydraulic power, which improvement had not been known in and before this application; that they had made oath that they did verily believe that they were the true inventors and discoverers of the said improvement, and had paid into the Treasury of the United States the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying their desire to obtain an exclusive property in the said improvement, and praying that a patent be granted for that purpose, granted according to law, to the said Zebulon Parker and Austin Parker, their heirs, administrators, and assigns, for the term of fourteen years, from the nineteenth day of October, one thousand eight hundred and twenty-nine, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof was given in the words of the said Zebulon Parker and Austin Parker themselves, in a schedule annexed to and made a part of said letters patent; which said letters patent were afterwards, to wit, on the said nineteenth day of October, one thousand eight hundred and twenty-nine, delivered to the Attorney General of the United States to be examined, and who, within fifteen days thereafter, to wit, on the twentieth day of October, one thousand eight hundred and twenty-nine, return[ed] the same to the Secretary of State, with his certificate thereon, that he had examined the same, and found them conformable to law; which said letters patent not being in the possession or under the control of said plaintiff, he cannot, therefore, produce to the court now here, but brings into court here a copy thereof, duly certified. And whereas, also, afterwards, to wit, on the twenty-seventh day of June, one thousand eight hundred and forty, the said Zebulon Parker and one Robert McKelvey, administrator of the said Austin Parker, then deceased, at the district aforesaid, obtained certain

other letters patent, issued in the name of the United States of America, under the seal of the Patent office thereof, and signed by John Forsyth, the then secretary of State, and countersigned by Henry L. Ellsworth, the then commissioner of patents, and bearing date at the city of Washington, on the day and year last aforesaid; which said letters patent, after reciting that whereas Zebulon Parker and Robert McKelvey, (administrator of Austin Parker, deceased,) of Ohio, had alleged that said Parkers had invented a new and useful improvement in the percussion and reaction water wheel, patented by Zebulon and Austin Parker, October the nineteenth, one thousand eight hundred and twenty-nine, which, they stated, had not been known or used before their application; had made oath that said Zebulon and Austin were citizens of the United States; that they did verily believe that said Parkers were the original and first inventors or discoverers of the said improvement, and that the same had not, to the best of their knowledge and belief, been previously known or used; had paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying their desire of obtaining an exclusive property in the said improvement, and praying that a patent might be granted for that purpose, granted according to law, to the said Zebulon Parker, and Robert McKelvey, in trust for the heirs-at-law of said Austin Parker, their heirs, administrators, and assigns, for the term of fourteen years, from the twenty-seventh day of June, one thousand eight hundred and forty, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvements, a description whereof was given in the words of the said Zebulon Parker and Robert McKelvey, in a schedule thereunto annexed, and made a part of said letters patent; (which said letters patent not being in the possession, or under the control, of the said plaintiff, he cannot, therefore, produce to the court now here, but brings into court here a copy thereof, duly certified.)

And the said plaintiff further says, that the said Robert McKelvey, administrator of the estate of Austin Parker, deceased, afterwards, to wit, on the thirty-first day of July, one thousand eight hundred and forty-one, at the district aforesaid, made his certain indenture, the date whereof is the day and year last aforesaid, whereby, for and in consideration of the sum of two thousand and five hundred dollars, to him in hand paid, in trust for the said heirs of the said Austin Parker, deceased, the receipt whereof was thereby acknowledged, did, acting for said heirs, assign and set over to said Zebulon Parker all the right, title, and interest which said heirs had in said invention and improvements, as granted by said two letters patent, for, to, and in the whole of the United States of America and territories, except the State of Michigan; the several counties of William, Lucas, Henry, Wood, Ottaway, Sandusky, Seneca, Huron, Wayne, Medina, Cuyahoga, Summit, Stark, Portage, Geauga, Ashtabula, Trumbull, and Columbiana, in the State of Ohio; and the county of Mercer, in the State of

Pennsylvania; the same to be held and enjoyed by the said Zebulon Parker, for his own use and behoof, and for the use and behoof of his legal representatives, to the full end of the terms for which letters patent were or might be granted for said improvements, as full and entirely as the same would have been held and enjoyed by said heirs-at-law had that assignment and sale not been made; and then and there delivered the said indenture to the said Zebulon Parker, to wit, at the district aforesaid; (which said indenture not being in the possession or under the control of the said plaintiff, he cannot, therefore, produce to the court now here, but he brings into court now here a copy thereof, duly certified.)

And the said plaintiff further avers, that the said Zebulon Parker, afterwards, and before the committing of the grievances hereinafter mentioned, to wit, on the twenty-second day of February, one thousand eight hundred and thirty-nine, at the district aforesaid, made his certain indenture, bearing date the day and year last aforesaid, whereby he did, for a valuable consideration by him had and received of one George Parker, bargain, grant, sell, and convey, unto the said George Parker, his heirs, executors, administrators, and assigns, the full and exclusive right and privilege of making, using, and vending to others to make and use, the said Zebulon and Austin Parker's (by the name and description of Z. and A. Parker's patent percussion and reaction water wheel,) within the State of Indiana, for the term of fourteen years from the nineteenth day of October, one thousand eight hundred and twenty-nine; and then and there delivered the said indenture to the said George Parker, to wit, at the district aforesaid, (which said last mentioned indenture, not being in the possession or under the control of the said plaintiff, he cannot produce to the court now here, but bring into court here a copy of said indenture duly certified.)

And the said plaintiff further says, that the said Zebulon Parker, afterwards, to wit, on the nineteenth day of October, one thousand eight hundred and forty, at the district aforesaid, made his certain other indenture in writing under his hand and seal, the date whereof is the day and year last aforesaid, whereby, after certain recitals therein contained, he did, for and in consideration of the sum of five hundred dollars to him in hand paid, the receipt whereof is thereby acknowledged, assign, sell, set over to the said Zebulon Parker all the right, title, and interest which he had in the said improvement, as secured to him by the said letters patent, dated on the twenty-seventh day of June, one thousand eight hundred and forty, and by the said assignment from the said Robert McKelvey, to and in the State of Indiana, and in no other place or places, the same to be held and enjoyed by the said George Parker, for his own use and behoof, and for the use and behoof of his legal representatives, to the full end of the term or terms for which letters patent were or might be granted for said improvement, as fully and entirely as the same would have been held and enjoyed by said Zebulon Parker had that assignment and sale not been made; and then and there delivered the said indenture to the said George Parker,

to wit, at the district aforesaid, (which said indenture, not being in the possession or under the control of the said plaintiff, he cannot produce to the court now here, but brings into court here a copy thereof duly certified.)

And the said plaintiff further avers, that the said George Parker, afterwards, and before the committing of the grievances hereinafter mentioned, to wit, on the seventeenth day of December, one thousand eight hundred and forty-seven, made his certain indenture under his hand and seal, the date whereof is the day and year last aforesaid, whereby, after reciting that he, the said George, had obtained the full and exclusive right to make, use, and to sell to others to make and use, within the State of Indiana, Z. and A. Parker's combined percussion and reaction water wheel; and whereas said plaintiff was desirous to obtain the said right for and within the counties of Cass, Fulton, Marshall, Miami, Wabash, Kosciusko, Whitby, and Noble, he did, in consideration of the sum of one thousand dollars to him in hand paid, the receipt whereof is thereby acknowledged, grant, bargain, sell, and convey to the said plaintiff, and to his heirs, executors, administrators, and assigns, the full and exclusive right, power, and privilege of making, using, and repairing and vending to others to make, use, and repair, and keep in use, within the said counties, in the State of Indiana, Zebulon and Austin Parker's patent combined percussion and reaction water wheels, according to the plans and specifications thereof, for the purpose of propelling all kinds of water mills, for the term of seven years from the nineteenth day of October, one thousand eight hundred and forty-three, and then and there delivered the said indenture to the said plaintiff, to wit, at the district aforesaid.

And the said plaintiff avers, that the said several letters patent and the said several indentures of assignment, were severally and respectively duly recorded in the Patent office of the United States.

And the said plaintiff further avers, that afterwards, to wit, on the fourth day of October, one thousand eight hundred and forty-three, at the district aforesaid, Henry L. Ellsworth, then commissioner of patents, made his certificate in writing, under his proper hand as such commissioner of patents, and bearing date the day and year last aforesaid, the seal of the Patent office being thereto affixed, whereby, after reciting that whereas, upon the petition of Zebulon Parker for an extension of the patent granted to Zebulon Parker and Austin Parker, on the nineteenth day of October, one thousand eight hundred and twenty-nine, (meaning the patent first in this declaration above named,) the board of commissioners under the eighteenth section of the act of Congress, approved the fourth day of July, one thousand eight hundred and thirty-six, entitled "An act to promote the progress of useful arts," to repeal all acts and parts of acts theretofore made for that purpose, did, on the seventh day of August, one thousand eight hundred and forty-three, certify that said patent ought to be extended, he, the said Henry L. Ellsworth, as such commissioner of patents, by virtue of the powers vested in him by said eighteenth section, did renew and

extend said patent, and certify that the same was thereby extended, for the term of seven years from and after the extinction of the first term, to wit, the nineteenth day of October, one thousand eight hundred and forty-three, and that said certificate of said board of commissioners, together with the said certificate of the said Commissioner of Patents, having been duly entered on record in the Patent office, the said patent then had the same effect in law as though the same had been originally granted for the term of twenty-one years; and so the said plaintiff avers that the said patent first above in this declaration mentioned, was upon the application of the said Zebulon therefor, and before the expiration of the term for which it had been granted, to wit, on the said fourth day of October, one thousand eight hundred and forty-three, renewed and extended for the term of seven years from and after the expiration of the said first term, the said certificate whereof, by the said Commissioner of Patents, together with the said certificate of the said board of commissioners, were severally duly entered on record in the said Patent office before the commencement of this suit, and before the committing of the grievances hereinafter mentioned, to wit, at the district aforesaid.

And the said plaintiff further avers, that the said Zebulon Parker, afterwards, and before the committing of the grievances hereinafter mentioned, to wit, on the seventh day of April, one thousand eight hundred and forty-eight, at the district aforesaid, made his certain other indenture in writing under his hand and seal, the date whereof is the day and year last aforesaid, whereby, after certain recitals therein contained, he did, in consideration of the sum of one thousand dollars to him in hand paid, the receipt of which was thereby acknowledged, assign, sell, and set over to the said George Parker all the right, title, and interest which he had in said patent, etc., permanently secured to him by said letters patent, dated on the nineteenth day of October, eighteen hundred and twenty-nine, and by said assignment from said Robert McKelvey, and by said certificate of extension for, to, and in the whole of the State of Indiana, and in no other place or places, for and during the full term for which said patent then was, or thereafter might be, extended, after the expiration of the original term of fourteen years; the same to be held and enjoyed by the said George Parker for his own use and behoof, and for the use and behoof of his legal representatives, during and to the end of the term or terms for which the letters patent for said improvement then were, or might be, extended after the expiration of the said original term, as fully, completely, and entirely as the same would have been held and enjoyed by the said Zebulon Parker had that assignment not been made, and then and there delivered the said indenture to the said George Parker, to wit, at the district aforesaid; which said last mentioned indenture was, after the making thereof, duly recorded in the Patent office.

And the said plaintiff further avers that the said George Parker, after the said last mentioned assignment to him, and before the committing of the grievances herein after named, to wit, on the twenty-ninth day

of May, one thousand eight hundred and forty-eight, at the district aforesaid, made his certain other indenture, in writing, under his hand and seal, the date whereof is the day and year last aforesaid, whereby, after certain recitals therein contained, for and in consideration of the sum of two thousand and five hundred dollars to him in hand paid, the receipt whereof is thereby acknowledged, he did grant, bargain, sell, and convey, unto the said plaintiff, and to his heirs, executors, administrators, and assigns, the full and exclusive right, power, and privilege, of making, using, and repairing, and vending to others to make, use, and repair, and keep in use, Zebulon and Austin Parker's (by the name and description of Z. & A. Parker's) patent combined percussion and reaction water wheel, according to the plans and specifications thereof, for the purpose of his own use and behoof, and for the use and behoof of his legal representatives, for the full term and terms to which his interest in the same would have extended had said conveyance not been made, in the counties of Cass, Fulton, Marshall, Miami, Wabash, Kosciusko, Noble, Lagrange, Laporte, St. Joseph, Elkhart, and Huntington, in the State of Indiana, and to all the waters of Deer creek, in the county of Carrol, in the said State of Indiana, and then and there delivered the said indenture to the said plaintiff, to wit, at the district aforesaid; which said last mentioned indenture was, after the making thereof, duly recorded in the Patent office.

Yet the said defendant, well knowing the premises, but and wrongfully intending to injure the said plaintiff in this behalf, after the making of the said several letters patent, and the said several assignments, and the granting of the said renewal and extension as above herein stated, and within the said term and terms of years in the said letters patent mentioned, so extended as aforesaid, as to the said patent first in this declaration above mentioned, to wit, on the thirtieth day of May, one thousand eight hundred and forty-eight, and on divers other days and times between that day and the day of the commencement of this suit, and within the limits of the county of Kosciusko, in the said State of Indiana, unlawfully and unjustly, and without the leave or license, and against the will of the said plaintiff, made, constructed, used, and vended, to sundry persons to plaintiff unknown, to be used, the said invention of the said Zebulon and Austin, and the said improvement thereon as above herein mentioned, in breach of the privileges granted and belonging to said plaintiff, as above set forth, to wit, at the district aforesaid; whereby the said plaintiff has been, and is, greatly injured, and deprived of the profits that he would otherwise have derived and acquired from the said invention and improvement thereon, to wit, at the district aforesaid; by reason of which said several wrongs and injuries the said plaintiff has sustained damages in the sum of two thousand dollars, and hence he brings this suit.

Z. BAIRD,
Attorney for plaintiff.

And afterwards, to wit, at the May term of said court, begun and

holden at Indianapolis, in said district, before the honorable John McLean, one of the justices of the Supreme Court of the United States, and the honorable Elisha M. Huntington, district judge of the United States, for the district of Indiana, on the twenty-first day of May, in the year of our Lord one thousand eight hundred and forty-nine, that being the first judicial day of said May term of said court, comes now the plaintiff, by his said attorney, and on his motion the defendant is ruled to plead on or before to-morrow morning, and day is given.

And afterwards, to wit, on the twenty-sixth day of May, in the year aforesaid, that being the sixth judicial day of said term of said court, comes now J. L. Jernegan, esq., and enters his appearance for said defendant, and files the following plea, to wit:

Now comes said defendant, and for plea says he is not guilty of said grievances in said declaration mentioned, in manner and form as therein alleged, and of this they put themselves on the country.

J. L. JERNEGAN, *for def't.*

And the plaintiff doth the like, by

SMITH & BAIRD, *his att'ys.*

Which said cause was continued from day to day, and from term to term, until the November term of said court, begun and holden at Indianapolis aforesaid, before the honorable Elisha M. Huntington, district judge aforesaid, on the second day of December, in the year of our Lord one thousand eight hundred and fifty, that being the fourteenth judicial day of said November term of said court; come the parties, by counsel, and thereupon come a jury, to wit:

John P. Case, David Barrack, Jethro S. Folger, A. A. Morrison, D. S. Snyder, Abram T. Jones, Lewis Bowlman, John Stockwell, Aaron Johnson, Thomas Johnson, Joseph Winder, and E. T. Cox, twelve good and lawful men of the district of Indiana, who being elected, empannelled, and sworn the truth to speak, upon the issue submitted between the parties, and a true verdict give according to the evidence; after hearing a portion of the evidence, this cause is continued, for further hearing of evidence and arguments of counsel, from day to day, until the thirteenth day of December, in said year aforesaid. Come now the parties, by counsel, and thereupon come the jury aforesaid, who, after receiving the charge of the court, retired to their room attended by a sworn bailiff, after due deliberation, return into court the following verdict, to wit:

"We, the jury, find the defendant not guilty." And day is given the parties.

And afterwards, to wit, on the fourteenth day of December aforesaid, before the court aforesaid, come the parties, by counsel, and the plaintiff files his bill of exceptions in these words, to wit:

Be it remembered, that, on the trial of this cause before the court and jury, after the evidence was given, and before the jury retired from the box, the court charged and instructed the jury as follows, to wit:

November term of circuit court of the United States, for the district of Indiana.

PHELPS
vs.
MOYER.

O. L. Smith, Zebulon Baird, Albert S. White, counsel for plaintiff; Samuel Judah, J. L. Jernegan, R. Crawford, counsel for defendant.

E. M. Huntington, district judge, delivered the following charge to the jury:

This is an action, gentlemen of the jury, for an infringement of two patents; the first, a patent granted to Zebulon and Austin Parker, dated October 19th, 1829, and subsequently extended to October, 1850, for a new and useful improvement in the application of hydraulic power. This patent has expired by limitation of law.

The second is for an improvement on the original patent, by the introduction of air-tight boxes, or drafts, as they are termed in the specification. This last patent is dated in 1840.

The declaration is in the usual form, setting forth the patents, and concluding with a general breach, that the defendant had constructed and used the machinery therein described, etc.

The trial of this cause has now occupied eleven days; but during the whole time you have listened with marked attention, and with that evident interest that satisfies me that whatever result your minds may come to, it will have been reached by careful consideration of every fact which bears upon the issue, and under a full sense of that responsibility which is ever the best security against error.

This case derives its importance, not from the amount involved so much as from the principles and facts which it may settle, and I confess to you, gentlemen, that in giving a construction to the patent of 1829 I am not insensible of the difficulties which meet me at the very threshold. It is my duty to give a construction to this patent, and to explain to you the principles of law which apply to the case, and this is the most I shall attempt to do; perhaps, by way of elucidating my views, I may briefly allude to some undisputed facts; the rest will be left to you.

The testimony, written and oral, drawn from every section of the country, and from such various sources, has been so fully commented on, and so thoroughly sifted by the counsel, that you will find no difficulty in recalling it, and I trust none in applying it to the matter in issue. The discussion, running through three entire days, has embraced in its range every possible matter which bears upon this cause, and has invested even the driest details with interest.

The first question which naturally arises in the case is, what do the patentees claim under the patent; or rather, what does the patent profess on its face to secure to them?

In general terms the patent is "for a new and useful improvement in the application of hydraulic power."

In the schedule referred to in the letters patent of 1829 the claim is thus stated:

I. "A compound vertical percussion and reaction water wheel for saw mills, and other purposes, with the method of applying the water on the same."

II. "An improved horizontal reaction water wheel, with the method of combining percussion with reaction on it."

III. "A method of combining percussion with reaction on common reaction wheels, or those already in use, and the following is a full and exact description of the construction and operation of the several parts of said improvement invented by us: The principle upon which this improvement is founded is that of producing a vortex within reaction wheels, which by its centrifugal force powerfully accelerates the velocity of the wheel, and adds proportionally to its momentum."

This is the general statement at the commencement of the schedule.

Then follows, under the first specification, a description of the compound vertical percussion and reaction wheel, and the mode of placing two, four, six, or more on the same horizontal shaft, with a description of the shaft, to all of which is a description of other contrivances, such as the concentric cylinder, the spouts, with the spiral terminations, the hollow or box gate, with the mode of constructing and working it.

The specifications under the second head describe the mode of improving the horizontal reaction wheel, whereby percussion is added to reaction; to which is also added the mode of applying the water by means of cylindric spouts, etc.

The third specifications describe the mode of combining percussion with reaction in the common reaction wheels, at the end of which the patentees sum up what they claim as original, as their invention with all their necessary dimensions and proportions, and for the use of which they ask an exclusive privilege, as follows:

"I. The compound vertical percussion and reaction wheel for saw mills and other purposes, with two, four, six, or more wheels on one horizontal shaft; the concentric cylinders enclosing the shaft, and the manner of supporting them; the spouts which conduct the water into the wheels from the penstock, with their spiral terminations between the cylinders;" and here let us pause for a moment, and see what is claimed under this head. The question whether a duplication of wheels on the same horizontal shaft is claimed by the patentees, as a new discovery of their own, has been very freely commented on by the counsel. What do the patentees mean when they say they claim as their invention "the compound vertical percussion and reaction wheel for saw mills and other purposes, with two, four, six, or more wheels on one horizontal shaft?" Taken alone, it is ambiguous; it may be made to mean that they claimed to be the inventors of this description of wheels, and of the mode of duplicating them on the same shaft.

On referring to the specifications in which they describe this claim, I

am led to the conclusion, that the duplication of wheels constituted an essential part of the mode by which they developed the new principle of percussion as claimed in the improved wheel. They nowhere state in any of the specifications that this power can be attained in a single vertical wheel. They say that "the compound vertical percussion and reaction wheel has two, four, six, or more wheels on a horizontal shaft. This is certainly very awkwardly expressed, but the intention is sufficiently clear. In a vertical wheel they can only develop this new power of percussion, claimed to be added to reaction, by placing two or more wheels on the same shaft. I think, therefore, the duplication of wheels must be taken in connexion with the mode of applying the motive power. I am aware that this view does not correspond with views expressed elsewhere, but it is the only construction I can give to the sentence, and make it conform to the statements in the schedule.

If my view is correct, it is wholly unimportant whether two or more vertical reaction wheels have not been used on the same shaft prior to Parker's invention, unless they had been used in the same way, i. e., unless the motive power had been applied in substantially the same manner as set forth in the schedule.

The testimony on this point is fresh in your minds, and if you are satisfied that pairs of such wheels prior to the invention of the Parkers, had been successfully used on the same horizontal shaft, and in the mode specified in the schedule, it is enough to defeat this action so far as the patent of 1839 is concerned. Nor need the whole, or any other part of the mechanical contrivances, be precisely such as are described; if they are substantially the same, though differing in form, and if they produce the same result upon the same principle, even if they do not produce so perfect a result, yet it will constitute a sufficient defence to this action.

Having disposed, then, of the only part of the patent which is obscure, I ask your attention to a few other points. The patentees claim as new, and their invention:

The concentric cylinders enclosing the shaft, and the mode of supporting them.

The spouts which conduct the water into the wheel, with the spiral terminations, etc.

The improvement in the reaction wheel, by making the buckets as thin at both ends as they can safely be made, and the rim no wider than to cover them.

The rim and buckets, or planks, that form the aperture into the wheel, and the manner of forming the apertures; the conical covering on the blocks, and the hollow or box gate, in any form.

All these various parts are within the claims of the patent, and it is for you to determine whether any distinct one of them has been known and used at any time prior to the invention of Parkers, as claimed by them. If so known and used, the patent cannot stand.

There has been a good deal of testimony introduced to prove that

some of these inventions were known and used at dates long prior to the claims of the patentees. You will give it such weight as it may deserve.

It is required of persons claiming patents for new discoveries to make oath at the Patent office that they are the "original or first inventors or discoverers" of the thing claimed. This oath was, of course, made by the Parkers, and it is prima facie evidence of the fact. This throws the burden of proving a prior use or discovery on the party who assails the patent on this ground.

But, to recur again to the patent. To adopt the language of Judge Kane, in the case of Parker vs. Hulme, tried in the eastern district of Pennsylvania, on the same patent, "the letters patent under which the plaintiff claims, vest in the patentees the exclusive right to construct and use mechanical devices, whether such as described in the specifications or equivalent therefor, for producing, directing, and applying as a motive power in reaction wheels, the centrifugal force of water revolving vertically round the shaft, and passing into and acting upon the wheels in the direction of their revolution."

This, then, is an important question; indeed it may be said to be the true touchstone by which the value of the discoveries claimed are to be tested.

If you believe, from the evidence, that a centrifugal motion of the water in the direction of the revolution of the wheel, thereby aiding in the propulsion of the wheel, has been produced by any machinery in actual use prior to the time of the invention claimed by the patentees, you should find for the defendant. The model, marked B, has been introduced for the purpose of illustrating this principle, and if you believe that a machine of which that is a model was in actual use, combining these powers in a greater or less, prior to the date of the patentee's invention or discovery, it must defeat the patent.

To defeat a patent on the ground of want of novelty, it is not necessary that the machine described, as in prior use, is precisely the same as the one patented; if it is substantially the same, and produces the same effect on the same principle, tho' differing in form, it is sufficient; for the law does not allow a man the exclusive right to what was before in use, simply because he changes the form of the machinery producing the effect, providing this change is only one of form, and not a substantial departure from that described in the patent.

To illustrate this principle. The Parkers claim the exclusive right to the concentric cylinders, to the helix, or spiral spout. Now if these, or either of them, were in use before they perfected their invention, though in mere form not precisely the same, the patentees have claimed too much, and the plaintiff cannot recover.

And this applies to every distinct matter embraced in the claim under the patent.

If they have embraced more in their patent than they are entitled to claim, they are bound to disclaim it in writing, in the Patent office at Washington, or it will defeat their claim to what was really their own,

unless it was inserted by inadvertence, accident, or mistake; and this excuse must in some way appear before it can avail a patentee.

These claims are not for a combination of various mechanical contrivances before known, but for new discoveries; therefore, if any one of these discoveries claimed as new are defeated on the ground of prior use or want of utility, the whole must fall.

In applying the testimony to the case in hand, under this rule, you will weigh the circumstances under which each witness testified. The testimony of a single credible witness who swears positively to a fact; for example, to the existence of a water wheel, or to a spout, must preponderate against any number of negative witnesses; but negative testimony is not to be disregarded, where the opportunities of the witness to know the fact about which he is called to testify, were very great.

The opinions of experts, or persons skilled in the mechanic arts, are entitled to more weight than the opinions of those not skilled. The testimony of the members of the Franklin Institute, with one exception, ascribe to the claims of the patentees great importance; indeed, I may say there is not room to doubt their great merit. The experiments made in our presence during the course of the trial, and the very lucid and interesting testimony of Mr. Morton, all concur in establishing for these improvements an inestimable value; but, gentlemen, you must be careful not to be so far dazzled by all this, as to forget to give full weight to every legal excuse which may exist in behalf of the defendant.

The wheels used in the defendant's mill were what is called the spiral vent wheels. I suppose it is not contended that in the use of the wheels the defendant has infringed the patent. If, however, he has used any other distinct thing within the claim of the patent, he is liable for the actual damages sustained by the plaintiff, between the date of the assignment and the commencement of this suit, provided you should be of opinion that the plaintiff shall recover.

The same remarks apply to the drafts or air-tight boxes, patented in 1840. The act of Congress of 1839 requires an inventor to make his application for a patent within two years from the date of the invention; that is, from the time the invention is perfected, for the law does not limit the time in which an inventor may make experiments with a view to perfecting the invention.

There is evidence by John Parker to prove that these drafts were invented by Zebulon and Austin Parker, and that they were put into use in various places as early as 1832. John Parker also swears, that about that time Austin Parker made out specifications with a view to obtain a patent, and he thinks that they were sent to Washington, but does not know positively—that Austin Parker died in 1834—the Patent office in .

The assignment of Robert McKelvey, administrator of Austin Parker, of his interest to Zebulon Parker, dated July, 1841, recites, that Austin Parker died intestate before the application for letters patent was made.

It is insisted that this estoppes the plaintiff from proving that any application for a patent had been previously made. The words of the assignment referred to were probably intended to apply to "the application" for the letters which were granted, and you will judge whether there is satisfactory proof that an application was made in the lifetime of Austin, and subsequently destroyed by fire.

You will judge, therefore, how far Austin Parker intended to dedicate this invention or discovery to the public use. Before you will infer such an intention against the interest of the patentee, you ought to be satisfied that it had gone into use, by his consent, more than two years before the date of the patent. The law gives him time to perfect his discoveries, but will not allow him to suffer them to get into use, and then resume a right he had voluntarily abandoned to the public. Any other rule would lead to great mischief. You will examine the testimony on this head, and if you find that air-tight chests or drafts were in use more than two years before the patent was obtained, and that no steps had been taken to procure a patent, you will find for the defendant on this patent. This is one part of the plaintiff's claim, and stands precisely in the same condition as the others; one may be good, the other invalid. If you find for the plaintiff, your verdict will be for the damages proved; if for the defendant, you will say so in terms.

And the court being requested by the plaintiff to give the following charges and instructions to the jury, refused to give the same or any of them; which instructions and charges asked for are in the words and figures following, to wit:

Such of the following instructions as are not embraced in the instructions given were refused:

First. That the patents, extension, and oath of the patentee are prima facie evidence of the originality of the invention or discovery at the dates of the patents, and also of the originality and usefulness of the application of the hydraulic power, and machinery specified and claimed in the patent.

Second. That the patents and infringement should be confined by the jury, to the claim in the patents, and specifications, and should not be extended by the jury to any other machinery or application of hydraulic power.

Third. That in order to defeat the patent on the ground of previous discovery, it lies upon the defendant to prove that the same application of the power was discovered and in use, substantially before the discovery, and application of the power by the patentee.

Fourth. That in order to defeat the patent, on the ground of previous discovery, its lies upon the defendant (after the patents and oath of patentee are in evidence) to prove that wheels, the same in principle, and in the mode and manner of the application of the water, was discovered and in use by others, before the date of the Parker patent.

Fifth. That the pairing of the old reaction wheel on a horizontal shaft, is no part of the patent, and is not claimed by the patentee; the claim is for the application of hydraulic power, in the first specification,

to the "compound vertical percussion and reaction water wheel, for saw mills and other purposes, with two, four, six, or more wheels on one horizontal shaft."

Sixth. That the patentee does not claim the discovery of the old reaction wheels as used before the patent issued, but does claim the improvement in reaction wheels by making the buckets as thin at both ends as they can safely be made, and rim no wider than sufficient to cover them, as a wheel upon which may be combined the spiral direction of the water and its rotary motion on the verge of the wheel so as to increase its velocity and power.

Seventh. That if the jury find from the evidence that the defendant has used the machinery or any part of it as claimed by the patentee, as stated in the declaration, and the jury find that the patentee was the original inventor of the same, they should find for the plaintiff, and assess his damages at what the use of the invention was worth for the time it has proved to have been used within the six months the plaintiff has had the right.

Eighth. That if the jury believe from the evidence that the defendant has used the air tight chest or box, described in the patent and schedule in evidence, within the six months immediately before the commencement of the suit, the jury shall find for the plaintiff for that infringement, and assess his damages; unless the jury find that it has been proved to their satisfaction that the patentees were not the original inventors of that patent, or that they have abandoned the improvement and dedicated it to the public before the patent issued; and such dedication and abandonment is never presumed, but must be proved, and is a matter of fact to be found by the jury from the evidence.

Ninth. If the court find it necessary and proper to charge upon the use of the parts of the machinery, and as to the argument that it avoids the patent if any part used not new, then we ask the court to charge section 9 of the act of Congress, of third March, 1837, page 489, of Curtis on Patents.

I did not comment on that section, because I supposed the court would charge the law of the case.

The duplication of reaction wheels on one horizontal shaft has no relation to the subject matter of the patent, as defined by the inventors. It is no where set forth in the specifications, separately, as an invention in itself new with the patentees. It is only mentioned in connexion or combination with the improved compound vertical percussion and reaction wheels as invented by patentees, and as an exemplification of the mode in which the same may be usefully applied. The word exemplification in this connexion is used in the specifications. If the jury have a reasonable doubt as to the novelty of the invention claimed in the specifications, that doubt should be solved in favor of the patent; Curtis, page 32, note 1.

Upon the subject of dedication we ask the court to charge the law as contained in Curtis in page 57, note 2; page 46, note 2; page 47.

That the box gate is not claimed as a separate invention except in combination with the conical covering.

To all and each opinion and decision of the court the plaintiff excepts, and prays that his bill of exceptions may be signed, sealed, allowed by the court, and made a part of the record, which is done according. E. M. HUNTINGTON. [SEAL.]

And moves the court for a new trial, and files the following reasons:

First. The verdict is contrary to evidence.

Second. The verdict is contrary to law.

Third. The court erred in point of law in the instructions given to the jury.

Fourth. The court erred in refusing the charges asked by the plaintiff.

And thereupon by agreement of parties the motion for a new trial is continued until the next term of court for argument.

And afterwards, to wit, at the May term of said court, begun and holden at Indianapolis aforesaid, before the honorable John McLean, one of the justices of the Supreme Court of the United States, and the honorable Elisha M. Huntington, judge as aforesaid, on the twentieth day of May, A. D. one thousand eight hundred and fifty-one, that being the second judicial day of said May term of said court, comes now on this day the plaintiff, by Smith, one of his attorneys, and upon his motion he has leave to file an additional reason for a new trial, which is filed and in these words, to wit: The plaintiff has discovered new and material evidence since the trial.

And day is given the parties.

And afterwards, to wit, on the twenty-third day of May, in the year last aforesaid, that being the fifth judicial day of said term of said court, come the parties by counsel; and thereupon, on the affidavit of James H. McKernon, new evidence is offered to the court, and after hearing a portion of the argument of counsel, on motion for a new trial this cause is continued for further hearing until to-morrow morning.

And afterwards, to wit, on the (26th) twenty-sixth day of May, in the year aforesaid, come the parties, by counsel, and after final argument of said motion for a new trial, the court not being sufficiently advised, give further day to hear their decision thereon; and day is given, &c.

And afterwards, to wit, on the thirtieth day of May, in the year aforesaid, come now on this day the parties, by counsel, and the court being sufficiently advised on the motion for a new trial heretofore made, overrule the same.

Whereupon it is considered by the court now here, that said defendant recover of said plaintiff his costs and charges in and about this suit in this behalf laid out and expended, taxed at dollars and cents. Thereupon the plaintiff files additional exceptions to the opinion of the *opinion of the* court in these words, to wit:

Be it known that the above motion came on to be heard on the following reasons, filed *filed* by the plaintiff in these words, to wit:

First. The verdict is contrary to evidence.

Second. The verdict is contrary to law.

Third. The court erred in point of law in the instructions given the jury.

Fourth. The court erred in refusing the charges asked by the plaintiff; the following patents and specifications being in evidence on the trial of the cause, which patents and specifications are in these words, to wit:

The U. States Patent office, to all persons to whom these presents shall come, greeting:

This is to certify, that the annexed is a true copy of the letters patent granted to Zebulon Parker and Austin Parker, omitting the specification.

In testimony whereof, I, Edmund Burke, commissioner of patents, have caused the seal of the Patent office to be hereunto affixed, this eighth day of April, in the year of Lord one thousand eight hundred and forty-eight, and of the independence of the United States the seventy-second.

[SEAL.]

EDMUND BURKE.

The United States of America, to all to whom these letters patent shall come.

Whereas, Zebulon Parker and Austin Parker, *a* citizens of the United States, have alleged that *he* has invented a new and useful improvement in the application of hydraulic power, which improvement they state has not been known or used before their application; have made oath that they do verily believe that they are the true inventors or discoverers of the said improvement; have paid into the Treasury of the United States the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said Zebulon Parker and Austin Parker, their heirs, administrators, or assigns, for the term of fourteen years from the nineteenth day of October, one thousand eight hundred and twenty-nine, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement; a description whereof is given in the words of the said Zebulon Parker and Austin Parker themselves, in the schedule hereto annexed and is made a part of these presents.

In testimony whereof I have caused these letters to be made patent and the seal of the United States to be hereunto affixed. Given under my hand, at the city of Washington, this nineteenth day of October, in the year of our Lord one thousand eight hundred and twenty-nine, and of the independence of the United States of America the fifty-fourth.

[SEAL.]

ANDREW JACKSON.

By the President:

M. VAN BUREN, *Secretary of State*.

CITY OF WASHINGTON, *to wit:*

I do hereby certify, that the foregoing letters patent were delivered to me on the nineteenth day of October, in the year of our Lord one thousand eight hundred and twenty-nine, to be examined; that I have examined the same and find them conformable to law, and I do hereby return the same to the Secretary of State, within fifteen days from the date aforesaid, to wit, on the twentieth day of October, in the year aforesaid.

JNO. MACPHERSON BERRIEN,
Attorney General of the United States.

The U. S. Patent office, to all persons to whom these presents shall come, greeting:

This is to certify, that the annexed is a true copy from the records in this office.

In testimony whereof I, Henry L. Ellsworth, commissioner of patents, have caused the seal of the Patent office to be hereunto affixed, this tenth day of February, in the year of our [SEAL.] Lord one thousand eight hundred and forty-two, and of the independence of the United States the sixty-sixth.

H. L. ELLSWORTH.

The schedule referred to in these letters patent, and making part of the same, containing a description in the words of the said Zebulon Parker and Austin Parker themselves, of their improvement in the application of hydraulic power.

To all to whom these presents shall come: Be it known, that we, Zebulon Parker and Austin Parker, of the county of Coshocton, and State of Ohio, have invented a new and useful improvement in the application of hydraulic power, by means of combining percussion with reaction. Applied and exemplified in—

I. A compound vertical percussion and reaction water-wheel, for saw mills and other purposes, with the method of applying the water on the same.

II. An improved horizontal reaction water-wheel, with the method of combining percussion with reaction on it.

III. A method of combining percussion with reaction on common reaction wheels, or those already in use; and that the following is a full and exact description of the construction and operation of the several parts of said improvements as invented by us. The principle upon which this improvement is founded is that of producing a vortex within reaction wheels, which, by its centrifugal force, powerfully accelerates the velocity of the wheel, and adds proportionably to its momentum.

1. The compound vertical percussion and reaction wheel has two, four, six, or more reaction wheels on a horizontal shaft made of iron or

wood, (iron generally being best,) which shaft has the crank to which the pitman and saw are attached at one end of it. The number of wheels necessary, their diameter, and the quantity of water they will require, depend on the height of the head of water, and the power and velocity required. In general, if the head of water be under six feet, six wheels will be necessary; between six feet and ten, four wheels will be required; and above ten feet, two wheels will be sufficient, for ordinary work, with one saw. If six wheels are required, a single one is placed on each end of the shaft, and two double ones between them, equally distant from the single ones and from each other; if four wheels are necessary, a single one is placed on each end of the shaft and a double one in the middle; and if two wheels only are used, a single one is placed near each end of the shaft. The diameter of a wheel, for a head of six feet and under, should be about 28 or 30 inches; and the diameter must be increased, and the sum of the issuing sections of the wheel diminished, in proportion to the increase of the velocity of the water, as the head increases in height.

The following is a description of a wheel and its appendages for a head of seven feet, which may serve generally as a data to base the calculations of other heads upon:

The horizontal shaft is about eight and a half feet long, exclusive of the gudgeons; and, if made of wood, about nine inches in diameter; if of iron, about five inches; between the wheels the shaft should be turned round and true; four wheels being necessary, a single one is placed on each end of the shaft, and a double one in the middle; the wheels are 34 to 36 inches in diameter; for the single wheels solid heads, 4 or 5 inches in thickness, are firmly fixed on the ends of the shaft; they are reduced on the insides (or sides next each other) to the thickness of $2\frac{1}{2}$ inches at the edge, and they must be the same thickness 4 inches in towards the shaft; in each of these solid heads, on the inner sides, five buckets, (so called,) made of sheet iron, cast iron, or wood, are fixed; they are five inches wide and $2\frac{1}{2}$ inches longer than one-fifth of the circumference of the wheel; the edges of these buckets are let half an inch into the heads; about $\frac{3}{8}$ of an inch from the verge of the heads a circle is made, upon which the inner side of the point of the buckets are placed; another circle is drawn $2\frac{1}{2}$ inches within this, upon which the outer side of the head, or inner ends of the buckets, are placed; the inside of the points of the buckets follow their circle about 4 inches, and the outside of the heads follow the circle upon which they are placed about $2\frac{1}{2}$ inches; on these buckets, so placed and let into the heads, wooden rims, equal in diameter with the wheels, 2 inches thick and about $3\frac{1}{2}$ inches wide, are put, the edges of the buckets being let $\frac{1}{2}$ an inch into them; the wheels thus formed are firmly bound together by screw bolts passing through the buckets; the middle wheels are made in the same manner, except that one solid head answers for both wheels, and it is reduced on both sides, from 5 to 6 inches at the shaft, to $2\frac{1}{2}$ inches at the edge; light iron bands should be put on the heads and rims of these wheels; the distance between the rims of the different wheels

should be 29 to 32 inches; these four wheels (so formed) will have an issuing section of 200 square inches—each wheel having 50 inches, and each issue 10 inches; the direction of the issues are at right angles to radii of the wheel drawn through them, or tangent to the circle on which the heads of the buckets are placed. The middle of the buckets, or that part of them between the two circles, should form a regular and natural curve. The best buckets are made of sheet iron; they should be doubled from the heads. The two ends of the piece forming the point of the bucket, they are left open enough in the middle for the bolts to pass through them. If they are made of cast iron, they have holes or grooves for the bolts; if of wood, the end of the grain or growth of the wood should be inserted into the heads and rims, and the bolts should pass through them, or the bolts being square may form part of the bucket. Wooden buckets are practicable in larger wheels, but inferior to iron. The penstock or bulkhead for this wheel is in width equal to the length of the shaft, and has a perpendicular breast. The breast is formed of three posts set in a cross sill, the top of which sill is level with the bottom of the penstock. The middle one of these posts is from 18½ to 21 inches wide, and about 10 inches thick, and the two end posts are each from 16½ to 18 inches wide, and as thick as the middle post; the two spaces between posts is each 24 inches. The breast continues perpendicularly below the top of the cross sill about 44 inches. The plank of this part of the breast is put on the front of the sill perpendicularly above the sill. The posts are planked on their rear horizontally; each of the posts may be double, or made of two pieces, and have spaces between them. The wheel is hung in front of the lower part of the breast, about a foot from it, with its top about level with the bottom of the penstock. It is hung in upright hanging posts or bearers, which may be elevated or depressed by wedges at the top of the penstock, the tops of the posts being put through timbers, and they may be wedged horizontally at the bottom. The wheel should be immersed to its centre (or lower) into the level of the water below the mill at its common low stage. The middle of the spaces between the wheels must correspond with, and be directly in front of, the middle of the spaces between the posts. About one foot in front of the wheel 4 studs or posts, which are 4 inches thick, and 8 or 10 inches wide, are set with their edges to the wheel. The spaces between two of these posts on either side must be about 22 inches. The middle of the spaces must correspond with the middle of the spaces between the wheels; the tops of these posts or studs are about level with the top of the wheel, or a few inches higher. They are inserted into a sill or floor at their bottom, and are held firmly to their places by a plank or piece of timber fixed on their tops. Two cylinders, concentric with the shaft and with each other, are placed in each space between the wheels. Their length is 27 inches, leaving a space of from half an inch to an inch and three-quarters between the ends of the outer cylinders and the rims of the wheels. The inner diameter of the outer cylinders is about half an inch less than the inner diameter of the rims of the wheels.

The inner diameter of the inner cylinder is about 10 inches, and its thickness about an inch. The spaces between the concentric cylinders are consequently about 8 inches. The larger cylinders are held stationary by a sort of wooden frames or rims which support them. These frames are each made of two pieces of plank, 18 inches wide, and an inch and a half thick, and of sufficient length to reach from the lower post of the breast to the studs in front of the wheel. They have their edges joined together by broad dowels and draw-pins near their ends. Circular holes are made in the middles of these joined planks or frames large enough to receive the ends of the larger cylinders, into which the ends are put and made fast. The ends of these frames are reduced in width to about 26 inches by taking off the bottoms of the lower planks at their ends. The frames are supported by having their ends inserted into grooves or mortices in the lower part of the breast at one of their ends, and into grooves or mortices in the studs in front of the wheel at their other ends. The joints of these frames lie level, and they, together with the cylinders, must be made to part horizontally into two equal segments for the purpose of getting them to their places round the shaft. To prevent the water from escaping between the ends of the larger cylinders and the rims of the wheels, additional sections are made to the internal surfaces of the larger cylinders, which extend into the wheels. These additions to the cylinders are made of rolled or hoop iron. They are held to their places by means of boards an inch thick, 18 inches wide, and 36 inches long, which have semicircles cut out of the middles of their sides nearly equal in diameter to the internal diameter of the rims of the wheels. A half of each of these hoops or additional sections is nailed into one of the semi-circles in the boards; two of these boards joined together in such a manner that the hoop appears complete, are screwed against the frames that support the cylinders, and fit closely against them and the ends of the cylinders; the edge of each hoop will consequently fit closely against each end of the larger cylinders, and the other edge should extend about an inch into the wheels; the outside of the hoops should be as close to the inside of the rims of the wheels as they can be without touching them; the holes in the boards which support the hoops through which the bolts go that fasten the boards to the frames, should be considerably larger than the bolts, and the heads of the bolts should be broad in order that the hoops may be kept to their proper places; these additions to the cylinders extending into the wheels may be made of cast iron, and be supported by iron plates screwed against the frames in the same manner as the boards, or the continuation of the cylinders may be wood instead of iron; iron hoops may be supported by the cylinders themselves instead of boards and plates, but in this case it is difficult to keep them in their proper places; from the breast immediately above the bottom of the penstock two spouts are inserted through the outer cylinders into the spaces between the cylinders; the spouts are as wide as they can be made between the posts of the breast; the top surfaces of the bottom planks of the spouts are tangent to the outer surfaces of the

inner cylinders, and the bottom surfaces of the top planks of the spouts are tangent to the inner surfaces of the outer cylinders; the spouts are consequently about 8 inches deep where they join the cylinders, and they should be about 15 inches deep where they are inserted into the breast; a partition an inch thick is put into each spout, dividing it perpendicularly into two equal parts; this partition as it winds round between the cylinders increases in its thickness, and its surfaces on both sides become regularly nearer to the wheels, till, in going once around, they terminate on the sides of the ends of the spouts next the wheels; these doubly spiral partitions support the inner cylinders; the water passes over the shaft, and the top of the wheel runs from the breast; at the bottom of the penstock, and joining the breast, a common chamber is made, out of which the wheels are supplied through the spouts; the chamber extends across the penstock, and is about 4 feet wide and 20 inches high; in the top of this chamber there is an aperture 6 feet long and 2 feet 4 or 5 inches wide; over this aperture a light hollow or box gate is placed, which is 6 feet 2 inches long by 2 feet 6 or 7 inches wide, and sufficiently high to extend to a proper distance above the surface of the water in the penstock; it is made to fit neatly on the floor or top of the chamber, and when it is down or shut, entirely covers the aperture into the chamber; it is hoisted by two wooden swords hinged to the inside of the gate near the bottom, the swords being also hinged at the top to two arms extending from a roller which is placed near the top of the gate; the roller is turned by levers in any way that is convenient; the gate is guided and kept to its place by grooves and sliders, or by bars across the penstock in any way that is convenient; the gate should hoist at least a foot; it is scarcely necessary to observe that care must be taken, by good racks and otherwise, to prevent the wheels from being choked in their issues.

II. The improved horizontal reaction water-wheel, with the method of combining percussion with its reaction. The dimensions and proportions of this wheel, and its appendages also, must vary to suit the head of water, the power required, and other circumstances. The following are nearly the proper dimensions of the wheel and its appendages for grinding with a stone 4 feet in diameter, with a head of water six feet high; the wheel is four and a half feet in diameter; it has 5 issues $3\frac{1}{2}$ inches wide by 5 inches deep; the buckets are made of wood; they are an inch thick at the heads or ends next the shaft, and increase to about an inch and a half thick in the middle, and from the middle decrease to about three-fourths of an inch at the points or outer ends; the issues are made to direct the water at right angle to radii drawn through them; the inside of the points of the buckets follow the circle on which they are set 4 or 5 inches, and the outside of the heads follow the circle about 2 inches; the points of the buckets extend by the heads about $2\frac{1}{2}$ inches; the rim that covers the buckets is about $2\frac{1}{2}$ inches thick and about 5 inches wide, or no wider than sufficient to cover the buckets; the edges of the buckets are let into the head and rim about $\frac{3}{8}$ of an inch; the wheel is bound together

by screw bolts, which pass through the thick parts of the buckets; the rim is made true in the inside by turning after the wheel is hung; the grain of the wood of the buckets stands upright; the wheel is placed or hung with its centre 4 or 5 feet in front of the breast of the bulkhead or penstock, and about half immersed in the water below the mill at its common low stage; a sill is placed on each side of the wheel, eight or ten inches from it; the top of these sills are about an inch higher than the top of the wheel; the sills support a frame or platform, 5 feet square, made of plank 15 inches wide and 3 inches thick, the principal bars of which are long enough to reach across the space between the sills; the inside of this platform is made circular to the same diameter as the inner diameter of the rim of the wheel. In this circle the cylinder that directs the water into the wheel is erected; the inner surface of the cylinder extends below the platform into the wheel; the cylinder above the platform is 14 inches high on that side of the wheel which runs from the breast, and it is reduced to the platform by a spiral line running from the breast and downwards, till it terminates on the platform directly under where it started. The part of the cylinder above the platform should be about 2 inches thick, and that sort which extends into the wheel below the platform should be about half an inch thick. An inner concentric cylinder, the outer diameter of which is 18 inches, its thickness $1\frac{1}{2}$ inch, and its height 4 or 5 feet, is placed round the shaft, with its lower end even with the top of the wheel. In the outside of this inner cylinder a spiral groove is made, which corresponds with the spiral top of the outer cylinder. A screw-like covering is made over the space between the cylinders, having one of its edges inserted into the groove in the inner cylinder, and the other nailed on the top of the outer cylinder; this covering supports the inner cylinder. Between the beginning and termination of the covering and the inner and outer cylinders, a section admitting a passage into the wheel 13 inches wide and 14 inches high. To this section, a spout from the penstock or bulkhead is joined, whose internal section at the junction exactly corresponds with the section forming the passage into the wheel. The largest end of this spout, or the end joined to the penstock, is 14 inches deep by about 20 inches wide. The spout has an inclination from the penstock equal to the inclination of the top of the outer cylinder. A common sliding gate shuts over the end of the spout in the penstock, or it may have a chamber and a hollow gate similar to that of the saw mill.

III. The method of combining percussion with reaction on common reaction wheels, or those already in use. The common reaction wheel runs under the floor of the penstock; through the floor a circular hole is made nearly equal in diameter to the internal diameter of the rim of the wheel, and it is made concentric with the wheel; this hole through the floor of the penstock is lined with staves, which extend from the floor into the wheel, and prevent the water from wasting between the floor and the wheel. The internal surface of this staving is called the cylinder. To apply the principle of percussion to one of these wheels,

and combine it with its reaction: Place on the level floor of the penstock a rim of wood, whose inner diameter is equal to the diameter of the cylinder; this rim may be from 8 inches to a foot wide, and 4 or 5 inches thick at the outer serge, and about 1 inch thick at the inner edge, the top being sloped downwards towards the centre of the wheel; on this rim are placed at equal distances from each other, with their edges up, from 5 to 10 pieces of planks or blocks, 4 or 5 inches thick in the middle, and about half an inch thick at either end, the inner side, or side next the shaft, being plain, and the outer side circular, or nearly so. The inner or plain sides of the blocks are placed tangent to the cylinder; they are about 12 inches high above the rim at their inner ends, and about 15 inches high at their outer ends; on these blocks an inverted conical covering is put, which is made to fit the tops of the blocks, the apex of which should come near to the bottom of the wheel. In the centre of this covering a circular square hole is made, into which a cylinder or square box is fixed, which is sufficiently large to enclose the shaft, and leave it room to run freely, and long enough to reach to a proper height above the water in the penstock. The water is let into the penstock, when the wheel is required to run, by any sort of gate usually employed in such circumstances, or it may be let in through a chamber by a hollow gate. Another mode of applying the principle, is to set the blocks that guide the water into the wheel tangent to a circle 2 inches outside of cylinder, and cover them with a rim that will only cover them. On the circular space between the ends of the blocks (or guides for the water) and the cylinder, a light hollow cylindric gate is placed which encloses the shaft of the wheel. The outer diameter of the gate is 3 inches larger than the diameter of the cylinder or inner surface of the staving. When this gate is to its place and shut or down, its stands directly over, and forms a continuation of the cylinder, extending to a proper height above the water in the penstock. It is hoisted by two swords of wood or rods of iron hinged to the gate near the bottom, either within or without, the tops of the swords or rods being hinged to arms from a roller, near the top of the gate, which is turned by a lever or levers. The gate is guided and kept to its place by 4 pieces of timber or joists across the penstock. One of these joists is placed on each side of the gate, about 18 inches from the floor of the stock, and one on each side at the top when the gate is down or shut. The edges of these joists are to the gate, nearly touching it. In the edges of each, at the point nearest the gate, a perpendicular notch or groove is made an inch or an inch and a half wide, and about the same depth, in which tongues or slides attached firmly to the sides of the gate slip up and down. The gate, however, may be guided and hoisted in any other way if circumstances require it. The dimensions hefe laid down, the number of apertures into the wheel, and their size, must vary according to the height of the head of water, the power required, and other circumstances. As a general rule for all the wheels, however, the sum of the sections into the wheels should not vary far from being double the sum of the sections of the

reacting issues of the wheels. The principle of combining percussion with reaction is applicable to inverted wheels, either by single spouts, with spiral terminations between cylinders, having their inclinations upward into the wheels, or by inverting the rim with its blocks and conical covering, so as to send the water upwards into the wheels. The parts of the above described machinery claimed as original, and our invention, in all their necessary dimensions and proportions, and for the use of which we ask an exclusive privilege, are as follows, viz:

I. The compound vertical percussion and reaction wheel for saw mills, and other purposes, with two, four, six, or more wheels on one horizontal shaft; the concentric cylinders enclosing the shaft, with the manner of supporting them; the spouts which conduct the water into the wheels from the penstock, with their spiral terminations between the cylinders.

II. The improvement in the reaction wheel, by making the buckets as thin at both ends as they can safely be made, and the rim no wider than sufficient to cover them; the inner concentric cylinder, the spout that directs the water into the wheel, and the spiral termination of the spout between the cylinders.

III. The rim and blocks, or planks that form the apertures into the wheel, and the manner of forming the apertures: the conical covering on the blocks, with the cylinder or box in which the shaft runs; and the hollow or box gate in any form, either cylindric, square, rectangular, or irregular.

ZEBULON PARKER,
AUSTIN PARKER.

Witnesses: JOHN JACOBSEN,
LABAN LEMERT.

(Patented 19th October, 1829.)

The schedule referred to in these letters patent, and making part of the same.

To all whom it may concern.

Be it known that I, Zebulon Parker, of Newark, in the county of Licking, and State of Ohio, did, in conjunction with the late Austin Parker, deceased, make certain improvements in the percussion and reaction water-wheels, for which letters patent of the United States were granted to Zebulon and Austin Parker, under date of the nineteenth of October, 1829; and it is hereby declared that the following is a full and exact description of the said improvements:

The percussion and reaction wheel, or wheels, whether on a horizontal or vertical axis or shaft, is enclosed in a box or case, which is denominated a draft; which draft is made air and water tight at the top and sides, but it is without a bottom, the mouth of said draft dipping into the water, and being, whenever the mill is running, below the level of the water in the tail race; its action in this case will be like that

of any air and water tight box having one side open, and that side placed downwards so that its edges shall dip into water; that is to say, if such box be filled with water it will remain full, provided its altitude above the surface of the water be not greater than that of a column which will be sustained by atmospheric pressure. The water which passes into these air tight cases, or drafts, passes in through the percussion and reaction wheels; in a manner to be presently described.

Fig. 1, in the accompanying drawing, is a perspective view of the front of the penstock, exhibiting the arrangement of two vertical wheels upon the same horizontal shaft; which arrangement is deemed one of the most convenient for saw mills, as well as for various other purposes. A, A, are the boxes or drafts, within which the wheels are contained; one of these A, having the upper portion and one end removed for the purpose of showing the wheel within it; B is the shaft, and C the reaction and percussion wheel within it; which wheel runs, as nearly as may be, water tight against the side of the draft, the wheel in the other draft serving to balance the pressure of the water upon it, and so reciprocally. D, is a crank on one end of the shaft, for communicating the power. E, E, are the passages for water on to the wheels; which passages are divided from each other by a partition, *a*, between them; the wheels cover circular openings in the sides of the drafts in the ordinary manner, through which the water is freely admitted to them. F, is the gate by which the admission of water to the wheel is regulated. The line G, G, shows the level of the tail water when the mill is running, and the lower edges of the drafts extend a little below this line when they open to the tail race; a part of this opening is seen at H.

Fig. 2, is a perspective view of the water-wheel placed horizontally, the vertical shaft of which adapts it directly to the purpose of running mill stones, as well as to many other objects. The draft in this case extends down on each side of the wheel, as at I, I; these two portions being connected by and forming one water receptacle, with the part denominated the wheel chamber J, which is the part in which the wheel is contained. K, is a sliding gate, to regulate the admission of water to the wheel, which is shown as governed by a toothed wheel on the vertical shaft L, making into a rack on the arm M of the gate; this gate covers an opening on the side of a circular curb upon which the wheel is placed. N, N, is the tail water line, as in fig. 1; the operation of the draft being the same as set forth in the explanation of that figure. O, is the end of the bridge tree, operating in the ordinary way. The apertures through which the water is conducted to the wheels are constructed in the manner, or upon the principle described in the specification of the original patent above referred to. As the drafts are made air and water tight, and they are usually filled with air before the mill is set into operation, it might be supposed that this air would interfere with their being filled with water, but such in fact is not the case, as from the agitation produced by the passing of the water from the wheels into the drafts, the air is intermingled therewith, and is speedily carried out with it, leaving the drafts entirely filled with water; by this

arrangement of the wheels within the drafts, they may be placed at a greater elevation than upon any other known plan, whilst, at the same time, the pressure or draft of the water below them will have the same effect upon them as it would if situated above them, and acting in the ordinary manner of head water.

What is claimed as new in the above described improvement on the percussion and reaction wheel, as originally patented by Z. and A. Parker, is the placing of the said wheel or wheels, or of wheels analogous thereto in their construction and mode of operation, within air and water tight cases or boxes herein denominated drafts, substantially in the manner and for the purpose above set forth.

ZEBULON PARKER.

Witnesses to the signature of Z. Parker:
JOHN MOORE,
B. W. BRICE.

ROBERT McKELVEY.

Witnesses to the signature of Robert McKelvey:
WM. OR. MERVIN,
C. A. McBANE.

"A."

Whereas Zebulon Parker and Austin Parker, of the county of Coshocton, and State of Ohio, did jointly obtain letters patent of the United States for an improved percussion and reaction water wheel, which letters patent bear date of the *the* 19th day of October, 1829; and whereas said Zebulon Parker and Austin Parker did, subsequent to the date of said letters patent, jointly make certain improvements in the construction and manner of using said wheels, for which they contemplated obtaining letters patent of the United States; and whereas said Austin Parker, previous to the application for letters patent for said improvements, died intestate; and whereas Robert McKelvey, of the county of Portage, and State of Ohio, is lawfully appointed administrator of the estate of said Austin Parker, deceased; and whereas said Zebulon Parker, in connexion with said Robert McKelvey, acting as administrator of said estate, did obtain letters patent of the United States for said subsequent improvements, which letters patent are dated on the 27th day of June, 1840; and whereas said Zebulon Parker is desirous of obtaining the whole interest of said patents: Now this indenture witnesseth, that for and in consideration of the sum of two thousand five hundred dollars to me in hand paid, in trust for the heirs at law of said Austin Parker, deceased, the receipt whereof is hereby acknowledged, I, the said Robert McKelvey, acting for said heirs, have assigned, sold, and set over, and do hereby assign, sell, and set over, to said Zebulon Parker, all the right, title, and interest which said heirs have in said invention and improvements as secured to them by said letters patent, for, to, and in the whole of the United States and terri-

tories, except the State of Michican, the several counties of Williams, Lucas, Henry, Wood, Ottaway, Sandusky, Seneca, Huron, Wayne, Medina, Cuyahoga, Summit, Stark, Portage, Geauga, Ashtabula, Trumbull, and Columbiana, in the State of Ohio, and the county of Mercer, in the State of Pennsylvania; the same to be held and enjoyed by the said Zebulon Parker for his own use and behoof, and for the use and behoof of his legal representatives, to the full end of the terms for which letters patent are or may be granted for said improvements, as fully and entirely as the same would have been held and enjoyed by said heirs had this assignment and sale not been made.

In testimony whereof I have here set my hand and affixed my seal, this 31st day of July, 1841.

ROBERT McKELVEY, [SEAL.]
Administrator of the estate of Austin Parker, deceased.

Witness:
E. FORSYTH,
AMOS KELVEY.

The United States Patent office, to all persons to whom these presents shall come, greeting:

This is to certify, that the annexed is a true copy of the letters patent granted to Zebulon Parker and Robert McKelvey, (administrator of Austin Parker, deceased,) omitting the specification.

In testimony whereof I, Edmund Burke, commissioner of patents, have caused the seal of the Patent office to be hereunto affixed, this eighth day of April, in the year of our Lord one thousand eight hundred and forty-eight, and of the independence of the United States the seventy-second.

[SEAL.]

EDMUND BURKE.

No. 1658.

The United States of America, to all to whom these letters patent shall come:

Whereas Zebulon Parker and Robert McKelvey, (administrator of Austin Parker, deceased,) Ohio, have alleged that said Parkers had invented a new and useful improvement in the percussion and reaction water wheels, patented by Zebulon and Austin Parker, October the nineteenth, 1829, which they state has not been known or used before their application; have made oath that said Zebulon is, and that said Austin was, a citizen of the United States; that they do verily believe that said Parkers are the original and first inventors or discoverers of the said improvement, and that the same hath not, to the best of their knowledge and belief, been previously known or used; have paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents signifying a desire of

obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said Zebulon Parker, (and Robert McKelvey, in trust for the heirs-at-law of Austin Parker,) their heirs, administrators, or assigns, for the term of fourteen years from the twenty-seventh day of June, one thousand eight hundred and forty, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Zebulon Parker and Robert McKelvey in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent office has been hereunto affixed.

[L. S.] Given under my hand at the city of Washington, this twenty-seventh day of June, in the year of our Lord one thousand eight hundred and forty, and of the independence of the United States of America the sixty-fourth.

JOHN FORSYTH,
Secretary of State.

Countersigned and signed with the seal of the Patent office.

HENRY L. ELLSWORTH,
Commissioner of Patents.

The United States Patent office, to all persons to whom these presents shall come, greeting:

This is to certify, that the annexed is a true copy from the records of this office of the certificate extending the letters patent issued to Z. and A. Parker, on the 19th October, 1829.

In testimony whereof I, Edmund Burke, commissioner of patents, have caused the seal of the patent office to be hereunto affixed, this fifth day of May, in the year of our Lord one thou-

[SEAL.] sand eight hundred and forty-eight, and of the independence of the United States the seventy-second.

EDMUND BURKE.

Whereas, upon the petition of Zebulon Parker for an extension of the patent granted to Zebulon Parker and Austin Parker, on the 19th day of October, 1829, the board of commissioners under the 18th section of the act of Congress, approved the 4th day of July, 1836, entitled "An act to promote the progress of useful arts, to repeal all acts and parts of acts heretofore made for that purpose," did, on the 7th day of August, 1814, certify that said patent ought to be extended.

Now, therefore, I, Henry L. Ellsworth, commissioner of patents, by virtue of the power vested in me by said 18th section, do renew and extend said patent, and certify that the same is hereby extended, for the term of seven years from and after the expiration of the first term, viz.,

the 19th day of October, 1843, which certificate of said board of commissioners, together with the certificate of the Commissioner of Patents, having been duly entered of record in the Patent office, the said patent now has the same effect in law as though the term had been originally granted for the term of twenty-one years.

In testimony whereof I have caused the seal of the Patent office to be hereunto affixed, this fourth day of October, 1843.

[L. S.] HENRY L. ELLSWORTH,
Commissioner of Patents.

And after argument the court overruled the motion, on all and each of said grounds, and render judgment for the defendant for costs, on the verdict of the jury; to which opinion of the court the plaintiff excepts, and prays that this his bill of exceptions may be signed, sealed, and made a part of the record, which is done accordingly.

E. M. HUNTINGTON. [SEAL.]

And, upon motion of the plaintiff, the court grant and allow a writ of error to the Supreme Court of the United States; and it is ordered by the court that the said plaintiff give bond in the sum of eight hundred dollars, to be approved of by the clerk, conditioned according *according* to law.

And thereupon a writ of error is issued in these words, to wit:

INDIANA DISTRICT, *sct.*

The President of the United States of America to Jacob Moyer, greeting:

Said Moyer is hereby admonished and cited to be and appear at a Supreme Court of the United States, to be holden at Washington city on the first Monday of December next, pursuant to a writ of error filed in the clerk's office of the circuit court of the United States, for the district of Indiana. Whereas Elijah Phelps is plaintiff and the said Jacob Moyer is defendant in error to show cause, if any there be, why judgment rendered against said Elijah Phelps, as in said writ of error mentioned, should not be corrected, and why speedy justice should not be done to the parties in this behalf.

Witness honorable Elisha M. Huntington, district judge of the United States for the district of Indiana, the 30th day of May, A. D. 1851.

E. M. HUNTINGTON.

And afterwards, to wit, on the twenty-fourth day of June, A. D. eighteen hundred and fifty-one, a bond is filed, which is approved of by the clerk, and which is in these words, to wit:

Know all men by these presents that we, James H. McKernon and Royal Mayhew, are held and firmly bound unto Jacob Mayer in the penal sum of eight hundred dollars, and to the payment whereof, well

and truly to be made, we bind ourselves and heirs firmly by these presents. Signed and sealed with our seals, and dated this 24th day of June, A. D. 1851.

The condition of the above obligation is such that, whereas Elijah Phelps is about to prosecute a writ of error from the circuit court of the United States, for the district of Indiana, to the Supreme Court of the United States, in a certain cause lately decided in said circuit court for said district, wherein the said Elijah Phelps was plaintiff and the said Jacob Moyer the defendant in trespass on the case.

Now, should the said plaintiff in error well and truly prosecute said writ of error, and pay and satisfy all costs that may be adjudged against him in the Supreme Court aforesaid, then the above obligation to be void, else to be and remain in full force and virtue.

JAMES H. McKERNON, [SEAL.]
ROYAL MAYHEW. [SEAL.]

And thereupon the following citation is issued, to wit:

The President of the United States of America, to the honorable judge of the circuit court of the United States, for the district of Indiana, greeting:

Because in the record and proceedings, and also in the rendition of a judgment of a plea in said circuit court, between Elijah Phelps, plaintiff, and Jacob Moyer, defendant, a manifest error hath happened to the great damage of said plaintiff, as by his said complaint appears. We being willing that error, if any, should be duly corrected, and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judgment be therein given, that under your seal you distinctly and openly send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States; so that you have the same, together with this writ, before the chief justice and associate justices of said Supreme Court on the first Monday of December next, at the city of Washington, the present seat of the National Government; that the record and proceedings aforesaid being inspected, the Supreme Court may cause further to be done therein to correct that error, what of right, and according to the laws and customs of the United States, should be done.

Witness honorable Roger B. Taney, chief justice of the Supreme Court, this 24th day of June, A. D. 1851.

Issued at the clerk's office, in the city of Indianapolis, under the [SEAL.] seal of the circuit court of the United States, for the district of Indiana, the day and year last aforesaid.

HORACE BASSETT, *Clerk*.

Upon which the marshal makes the following return, to wit:

"Served on the within named Jacob Moyer September 1st, 1851, by reading and copy.

S. MEREDITH, *Marshal*,
By E. WOOLMAN, *Deputy*.